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POST-TYPHOID PERIOSTITIS.

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POST-TYPHOID PERIOSTITIS.*

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PERIOSTITIS, as a sequel of typhoid fever, while said to be not particularly uncommon, finds very little place in the text-books on internal medicine, and to the physician meeting with such cases there is very little satisfaction in the care and management of patients thus affected to be found even in the latest works on surgery. At least this has been my experience. The two following cases have occurred under my observation:

CASE I.—Mrs. P., aged thirty years; married; the mother of one child six years old; had enjoyed good health always, with the exception of a dysmenorrhœa. She was taken ill December 6, 1893, with typhoid fever, which ran a very severe course, terminating favorably about the middle of the following February. The only complication of any note was a moderately severe phlebitis, involving the left femoral vein, which entirely subsided. April 15th, having been up and about the room for two weeks, there was noticed a decided lameness of the right leg, soon leading to the discovery of tenderness over the right tibia. In a week there was so much pain that she could scarcely bear any weight on

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the leg. April 21st my attention was called to the case. At about the middle of the anterior surface of the right tibia, to the inner side of the crest, was a prominence five centimetres long by two wide, which was very hard, and exquisitely tender. The pain was quite severe and continuous. There was increased heat and some redness about the parts. The patient was placed in bed with the foot elevated, and the tincture of iodine applied daily for three days. No relief whatever ensued, and on April 24th, under chloroform anæsthesia, a free incision was made the length of the swelling, through the periosteum to the bone. A slight amount of serous exudate appeared, but the periosteum was still adherent. The wound was thoroughly irrigated with a bichloride solution (1 to 4,000), and an iodoform dressing applied. In a few hours complete relief from pain followed. The wound was dressed daily, and healed in about ten days without further trouble.

CASE II.—Mr. H., thirty-eight years of age; married; clerk by occupation; family history unimportant, excepting that one brother died of acute pneumonic phthisis. In November, 1895, he had a mild attack of typhoid fever, running about eighteen days, which was followed in a week after convalescence by a relapse of great severity, attended by maniacal delirium, profuse intestinal hæmorrhages, high fever, and albuminuria. The course of the fever extended from December 23d to February 3d. The temperature did not entirely reach the normal. At the latter date he began to have intense flying pains through both legs, with tenderness along the nerves; was exceedingly restless, sleepless, and hysterical. This state continued for about two weeks, during which time a diagnosis of multiple neuritis was tentatively made, when there commenced to develop local swellings, attended by more continuous pain, and clearly defined areas of tenderness. At this time a tendency to the accumulation of fæces in the rectum, in spite of daily evacuations, occurred, necessitating the removal of large quantities of faecal mat-

ter by means of the finger on two or three separate occasions. By March 22d the conditions were as follows: The patient was considerably emaciated; temperature, 99.5° to 100.5° F.; pulse about 100. Appetite fair, nights restless. At the junction of the last costal cartilage and the right side of the sternum was a hard round swelling, twelve centimetres in diameter, tender on pressure, and the seat of considerable pain. The anterior surfaces of both femora were the seat of similar swellings, that of the right being much the more prominent and more tender; they were in corresponding locations, extending from a little above the patella to the middle transverse line of the femur, and laterally occupying the whole anterior surface. Over the right tibia, just below the insertion of the patellar tendon, was another prominence, presenting the same characters as to tenderness on pressure, hardness, and local heat. This occupied an area two centimetres wide by six in length. Over the left tibial anterior surface, at the junction of the middle and lower thirds, was still another prominence of the size of a half filbert, presenting similar characteristics. The patient had been on a varied tonic course, with iodides in increasing doses. Guaiacol was given internally and applied externally. Locally, ice or heat was also used, according to the relief from pain obtained. April 1st, slight fluctuation was noticed on the costo-sternal swelling, when a free incision was made, giving exit to a small amount of thin, sero-purulent fluid. A probe readily passed down to the cartilage. The wound was thoroughly cleansed with a three-per-cent. pyrozone solution, and irrigated with bichloride (1 to 2,000), when an iodoform dressing was applied. Relief to pain in this region occurred, the discharge increased in amount, became more purulent, the swelling decreased, and in six weeks the opening closed, leaving only a slight indentation. A bacteriological examination of the discharge a few days after the operation, by Dr. Gifford, revealed only the pus cocci. With the advent of warm weather there was

soon improvement in his general condition; he was able to walk about with the aid of crutches, but the remaining swellings persisted, with occasional slight remissions as to both size and tenderness. August 22d there was found well-marked fluctuation in both tibial swellings. The patient was anæsthetized and a free incision made in each. The right was eight or ten centimetres long, gave exit to a small quantity of sero-purulent matter, and exposed an area of denuded bone six by two centimetres. The periosteum was necrotic over this area, and at the upper part of the incision was a shallow carious cavity in the bone. This, with the area of denuded bone, was thoroughly curetted, the necrotic periosteum was cut away, and the wound irrigated and dressed as usual. The left tibial swelling was treated in a similar manner, but no carious bone was found. Both wounds were healed in about six weeks. From this time to January 15, 1897, several other foci developed, one on the postero-lateral surface of the left tibia, one on the outer border of the left ulna, and one on the lower anterior surface of the right tibia. The two former disappeared spontaneously; the latter was operated upon January 15, 1897. The patient was attending to business part of the time, going about on crutches, and in February went South. He returned about two weeks ago, much improved in general health, and was able to be about freely with the aid of a cane. No new developments had occurred, but the femoral swelling on the right leg is still marked, tender to firm pressure, and occasions slight inconvenience in walking. The left has almost disappeared.

The general treatment has consisted in the administration of guaiacol in doses reaching twenty drops, with strychnine, one to twenty grains, the bone marrow extract, and at times iron and iodides. The greatest benefit appeared when on guaiacol. Locally, guaiacol, ice, heat, and poultices were used at different times.

The question of greatest moment in the manage-

ment of this case was as to operative interference. The patient was much averse to such, unless clearly indicated, and the text-books at my command gave me very little, if any, aid. Several surgeons saw this case and were indifferent to operation. The fact of spontaneous subsidence and disappearance of some of the areas involved led to a procrastination about operating upon others, which I am sure delayed recovery.

In volume xxii of the *Annals of Surgery* an article upon Post-typhoid Bone Lesions appeared from the pen of Dr. Harold C. Parsons, assistant in the clinic of Dr. Halsted in the Johns Hopkins Hospital. This paper came to my notice while I was in attendance in Case II, above reported, and gave me more satisfaction in a study of the subject than could be obtained from any other resource at my command. In the Toner Lecture, 1876, Parsons writes, W. W. Keen quoted forty-one cases, thirty-seven of which had followed typhoid fever. In the same year Sir James Paget described most fully, from the clinical standpoint, an inflammatory condition of bone occurring at various periods after typhoid fever, pursuing a more or less chronic course, with but little tendency to spontaneous recovery except after long periods of time. He had seen some seventy cases, all after typhoid fever. The discovery of the Eberth-Gaffky bacillus as the specific cause of typhoid fever led to the establishment of a direct specific connection between this disease and the bone lesions which followed. Ebermaier, in 1887, found in two cases of suppurative periostitis, following typhoid, the Eberth bacillus in pure culture. Orloff, in 1889, found the same in a periosteal abscess six months after typhoid. Achalme, Melchior, Golgi, and others have had a simi-

lar experience. In these cases the typhoid bacillus was regarded as the sole cause of the pathological condition in the bone lesion sequelæ. Other writers have reported finding pus cocci alone in the discharge, and also those associated with the Eberth bacillus. That this bacillus has pyogenic properties has been proved beyond question by Orloff and Adenot, who succeeded in producing suppuration by injection, subcutaneously, of pure cultures, the pus showing this bacillus alone. The experiments of Golgi are of interest in this connection. He injected the pure culture at some distance from the seat of fracture in a long bone in the lower animals, with the result of producing suppuration at the point of injury; the pus showed the typhoid bacillus alone.

Dr. Parsons, in his article in the *Annals of Surgery*, reported six cases observed in Johns Hopkins Hospital Clinic, five of which were worked out bacteriologically. In four out of the five the typhoid bacillus was found in pure culture; the fifth case was one of mixed infection, the lesions of the radius showing the specific germ associated with the *Staphylococcus pyogenes citreus*, and the tibial lesion the *Staphylococcus pyogenes aureus* alone.

The bones most commonly involved are the ribs, tibia, femur, radius, ulna, and humerus. It will be noticed in my second case that both tibiæ, both femora, the costal cartilage, and the left ulna were involved at the same time. The tibia is said to be most commonly affected.

It is typically a post-typhoid affection, occurring after the fever has entirely subsided, and sometimes as late as several months afterward. The latest recorded

observations are from between ten and a half to eighteen months following the disappearance of the fever. In one instance, reported by Ebermaier (Parsons), the lesion appeared on the thirteenth day of the fever.

The disease is usually chronic and the duration variable. In suppurative cases the necrosis may persist for several years. In cases unattended by necrosis there may be subsidence and relapse, extending over a long time. In my own case, at present writing, now sixteen months after the fever, the femoral enlargement on the right side is very marked, although attended by only slight tenderness, and with no tendency to suppuration. Sir James Paget refers to one patient who remained subject to repeated attacks of pain and swelling of the periosteum three years, yet without any sign of suppuration (Parsons).

Pain and swelling involving the bone, are the chief symptoms. Fever is, as a rule, said to be absent. In my second case there was for months a daily rise in the afternoon to from 99.5° to 101° F.; the pulse is not accelerated; the appetite and digestion are not interfered with. Indications of suppuration are redness, increasing tenderness, and fluctuation. The diagnosis in acute and early well-defined chronic cases is simple. The history of preceding fever will establish a relationship. In my second case the severity and distribution of the pain without manifest lesion for nearly two weeks led to a suspicion of multiple neuritis. This error would hardly have occurred in any other than a case of multiple lesion.

The treatment will vary according to the type and extent of the trouble. In acute cases, such as my first reported, the indications for early operative interfer-

ence are plain. The intensity of the pain, the exquisite tenderness, and the swelling are quickly relieved by a free incision through the periosteum. So early in the case rarely will any destruction of periosteum or bone be found.

In the more chronic types, the fact that spontaneous recovery does occur tends to place one in doubt as to the necessity for operation in cases which do not present the signs of breaking down. That this might frequently be prevented by early use of the knife I think is true. Where signs of suppuration are present, an operation for the removal of all diseased structures, whether of skin, periosteum, or bone, should be done. Incomplete attempts are apt to be followed by long-continued suppuration and necrosis. The persistence of the germ in involved areas has been found to continue for several years, one having been reported as long as seven.

Aside from the usual tonic line of treatment which the indications call for, I am satisfied that the internal and local use of guaiacol has answered well in my hands. Amelioration of swelling and tenderness certainly followed the use of this drug in the case I observed so steadily and so long. Twenty-drop doses were reached by degrees and no unpleasant symptoms presented.

There were no effects apparent from the iodides, even when carried up to large doses, nor from the salicylates.

In the most active period of the disease rest should be enjoined; at other times, when the lesions are in the lower extremities, the use of crutches will materially aid in permitting the patient to enjoy the benefits of being more or less in the open air.

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